

**REMARKS**

In the present Amendment, claim 25 has been amended to further define a solution. This amendment is supported by the disclosure, for example, page 11, lines 19-20 and page 4, lines 6-9. In addition, claims 26, 27, 29, 31 and 44 have been amended to be consistent with the amendments to claim 25. Further, claims 35 and 38 have been amended to change their dependency. New claim 46 has been added. Claim 37 has been canceled without prejudice or disclaimer. Claims 1-24, 34 and 36 were previously canceled.

Applicants respectfully submit that entry of the amendments, after final, is proper, at least because they place the application either in condition for allowance or in better form for appeal. See M.P.E.P. § 714.12. Upon entry of the Amendment, claims 25-33, 35 and 38-46 will be all the claims pending in the application.

**I. Response to Rejection under 35 U.S.C. § 103(a)**

Claims 25-33 and 37-45 were rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over U.S. Patent No. 6,063,883 to Besner et al. in view of U.S. Patent No. 3,663,261 to Miettinen et al. and U.S. Patent No. 4,303,705 to Kelso. Applicants respectfully submit that the claims as amended are patentable over Besner et al. in view of Miettinen et al. and Kelso for at least the following reasons.

Independent claim 25 recites a process for the treatment of wooden elements, said process comprising the following steps: a) conditioning said wooden elements to reduce their moisture content; and b) performing one of the following sequences of steps selected from the group consisting of at least the sequence of steps b1) to b4) or at least the sequence of steps bb1) to bb2); said sequence of steps b1) to b4) at least comprising: b1) impregnating the wooden elements obtained from step a) with at least one water-borne wood preservative, b2) heating the wooden elements obtained from step b1) at a temperature of at least 51° C, to fix

said wood preservative(s) in said wooden elements; b3) impregnating the wooden elements obtained from step b2) with a solution comprising a cross-linkable polymer having cross-linkable reactive groups selected from the group consisting of an allyl group, a vinyl group, an acrylate group and a methacrylate group, that can form a cross-linked polymer under cross-linking condition in the absence of a thermo-initiator, and b4) subjecting the wooden elements obtained from step b3) to cross-linking condition to cross-link said reactive group(s); said sequence of steps bb1) to bb2) at least comprising: bb1) impregnating the wooden elements obtained from step a) with a mixture comprising at least one water-borne wood preservative and cross-linkable polymer having cross-linkable reactive groups selected from the group consisting of an allyl group, a vinyl group, an acrylate group and a methacrylate group, that can form a cross-linked polymer under cross-linking condition in the absence of a thermo-initiator, and bb2) heating the wooden elements obtained from step bb1) in the absence of a thermo-initiator at a temperature of at least 51°C to fix said wood preservative(s) and to cross-link said reactive groups.

Besner et al. discloses that a wood article is submitted to a vacuum in an autoclave to remove air that it contains. Then, a solution which contains a water-soluble cross-linkable polymer, a polymerization initiator and optionally a wood preservative is introduced into the autoclave. Cross-linking to form a polymeric network in the wood article is carried out in an atmosphere which may be substantially free of oxygen, while the optionally present preservative is chemically fixed to the wood. The Office Action concedes that Besner et al. fails to teach cross-linking in the absence of a thermo-initiator (polymerization initiator) and heating at a temperature of at least 51°C.

Miettinen et al. discloses a method for preparing plastic impregnated wood with a liquid resin comprising a mixture of an unsaturated polyester with about 35 to 95% of methyl

methacrylate and/or styrene under nitrogen atmosphere, whereby their viscosity is decreased sufficiently to permit wood impregnation with the mixture (col. 4, lines 8-10; claim 1). The impregnated wood is cured at a temperature between 40° and 60°C using radioactive radiation optionally in the presence of a chemical catalyst, which initiates free radical polymerization (col. 4, lines 35-41 and 55-70; claim 1).

Miettinen et al. teaches that the polymerization with radioactive radiation is dependent on the monomers' heat of polymerization and their respective radiation dose required. There is no description in Miettinen et al. that the same conditions would be effective for other monomers. As such, one of ordinary skill in the art would have had insufficient reason to modify Besner et al. by replacing the polymerization conditions therein with those described in Miettinen et al.

The Office Action asserts that "Miettinen et al. further teaches that this polymerization can be conducted in the absence of a thermo-initiator," relying on the description at col. 4, lines 39-42 of Miettinen et al. (page 4, last paragraph of the Office Action). Applicants respectfully disagree.

Miettinen et al. states at col. 4, lines 39-42, that "It is not even necessary to remove the inhibitor from the monomer nor is it necessary to add any catalyst, whereby the excess from the impregnation step is recovered in pure state." Applicants submit that this description of Miettinen et al. refers to a polymerization reaction using radioactive radiation optionally in the presence of a chemical catalyst, and is not related to a thermo-initiator.

In fact, Applicants submit that based on the teachings of Miettinen et al., one of ordinary skill in the art would understand that radioactive radiation is essential for initiating the polymerization in order to carry out the method for preparing plastic impregnated wood disclosed therein. There is nothing to be found in Miettinen et al. that would suggest a

polymerization reaction without using the radioactive radiation as the polymerization initiator. As such, even if Miettinen et al. and Besner et al. are combined, the combination still would not result in a process in the absence of a thermo-initiator (polymerization initiator), as recited in present claim 25.

Kelso discloses a process for the treatment of wood in which water-borne wood treatment materials, such as CCA salts, are forced into the wood under pressure and the water-borne wood treatment materials are held within the wood under pressure until they are deposited by precipitation or chemical affixation. Kelso does not provide the motivation for combining Besner et al. and Miettinen et al. Moreover, as Kelso does not rectify the above noted deficiencies of Besner et al. and Miettinen et al., the combination of Besner et al., Miettinen et al., and Kelso still would not result in the subject matter recited in present claim 25.

Present claim 32 depends from claim 25, indirectly, and further recites a cooling step of the wooden elements obtained from step b2) carried out for a period of at least 1 to 12 hours.

As described on page 8, lines 24 to 26, of the present specification, "It has been surprisingly found that the cooling period results in preventing premature polymerization of the DM-PEG solution during the treating cycle. If it polymerized too quickly, it will be difficult to obtain a complete penetration of the outer 25 mm (1") shell."

The Office Action concedes that Besner et al. in view of Miettinen et al. and Kelso fail to explicitly teach a cooling step being carried out for a period of at least 1 to 12 hours, but asserts that it would have been obvious to include a cooling step for a period of at least 1 to 12 hours.

None of Besner et al., Miettinen et al. and Kelso discloses or suggests a cooling step for a period of at least 1 to 12 hours, or the above noted effects achievable therefrom.

Regarding claims 37-39, Applicants respectfully submit that none of Besner et al., Miettinen et al. and Kelso discloses or suggests the cross-linkable polyethylene glycol of claims 37-39 that can form a cross-linked polymer under cross-linking condition in the absence of thermo-initiator (polymerization initiator).

In view of the foregoing, Applicants respectfully submit that claim 25 is patentable over Besner et al. in view of Miettinen et al. and Kelso, and thus the rejection should be withdrawn. Additionally, claims 26-33, 35 and 38-45 depend from claim 25, directly or indirectly, and thus are patentable over the cited references at least by virtue of their dependency and for the above additional reasons (relevant to claims 32 and 37-39).

## **II. New claim**

New claim 46 depends from claim 25 and thus is patentable over the cited references at least for the reasons set forth above.

## **III. Conclusion**

From the foregoing, further and favorable action in the form of a Notice of Allowance is believed to be next in order and such action is earnestly solicited. If there are any

questions concerning this paper or the application in general, the Examiner is invited to telephone the undersigned at his earliest convenience.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY PC

Date: September 29, 2009

By:



Fang Liu, Ph.D.

Registration No. 51283

P.O. Box 1404  
Alexandria, VA 22313-1404  
703 836 6620